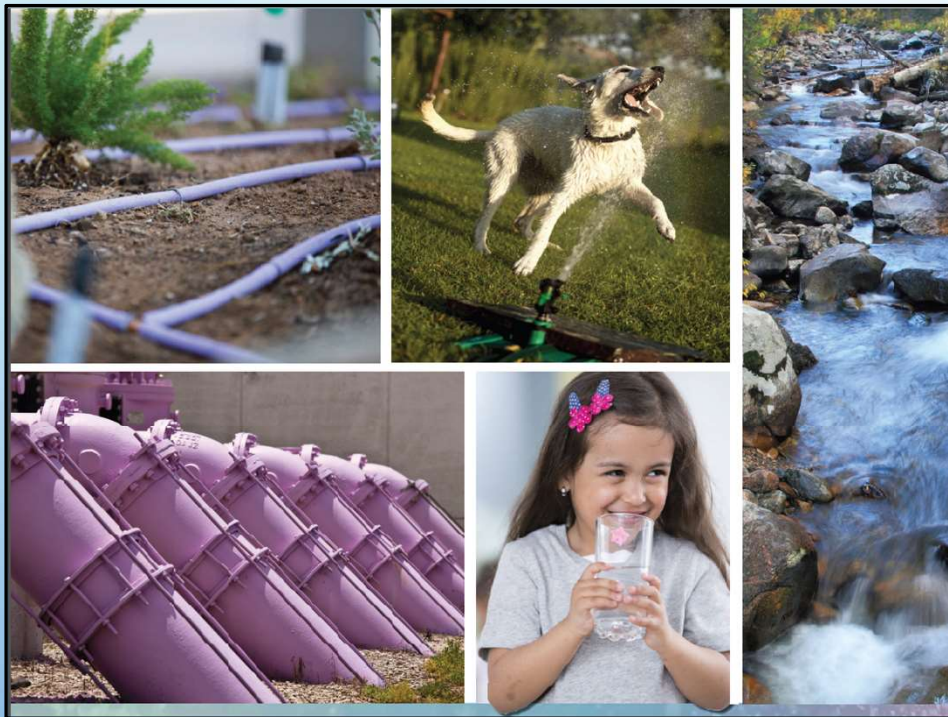


Water Reuse in Colorado: 2020 Update



South Platte Basin Roundtable
April 14, 2020

Austa Parker, PhD

Environmental Engineer and Planner,
Water Resource Efficiency
Denver Water

Laura Belanger

Water Resources Engineer
Western Resource Advocates



Outline

Colorado Reuse Update

- Reuse Overview
- Progress Update and Next Steps
 - Reclaimed Water
 - Direct Potable Reuse
- Reuse and the BIP Update



Reusable Supplies = Legally Fully Consumable Water

Some of the Reasons to Reuse Water

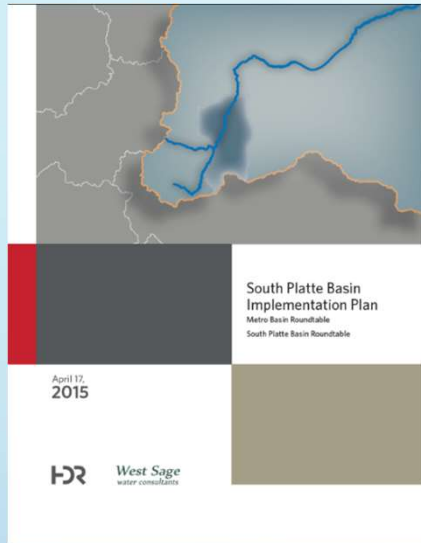


Water can be treated to meet the water quality & safety needs of any intended use.

Current Drivers and Opportunities for Reuse




- Colorado Water Plan: 2050 M&I gap as high as 560,000 acre-feet/year.
- Return flow availability: Currently, more reusable return flows than we can reuse. SPROWG study shows average of ~60,000 acre-feet/year in South Platte Basin.
- Public sentiment: 80% of Colorado voters polled support increasing water conservation and reuse (2018 State of the Rockies, Colorado College poll).



2015 South Platte Basin Implementation Plan

- “Maintain leadership in conservation and reuse and implement additional measures to reduce water consumption rates”
- “...enhance current levels of municipal reuse.”
- “Efficient use of the basin’s resources, through water reuse and conservation, is a critical component of meeting future water needs:
- “Implement additional reuse where practicable.



Non-Potable Reuse (Reclaimed Water) in Colorado

Reclaimed Water Basics

- Source = Wastewater that has been treated to meet permit limitations then further treated by a reclaimed water treatment facility to meet specific water quality standards
- WQCC Regulation 84 governs reclaimed water
- ~16,000 AF/year potable water saved with non-potable reuse in CO
- Delivered in separate purple pipe distribution systems
- Currently, seasonal landscape irrigation makes up the majority of consumption



Reclaimed Water History & Future



2000
New Reg 84:
landscape irrigation

2005
Reg 84:
expanded irrigation

2018
Legislation
Reg 84:
toilet flushing and localized systems

2020
Upcoming
Reg 84:
oil and gas production and development




2004
Reg 84:
cooling towers, industrial and commercial

2013
Reg 84:
commercial laundries and car washes



2019
Reg 84:
edible [food] crops and industrial hemp





Potable Reuse (Purified Water) in Colorado

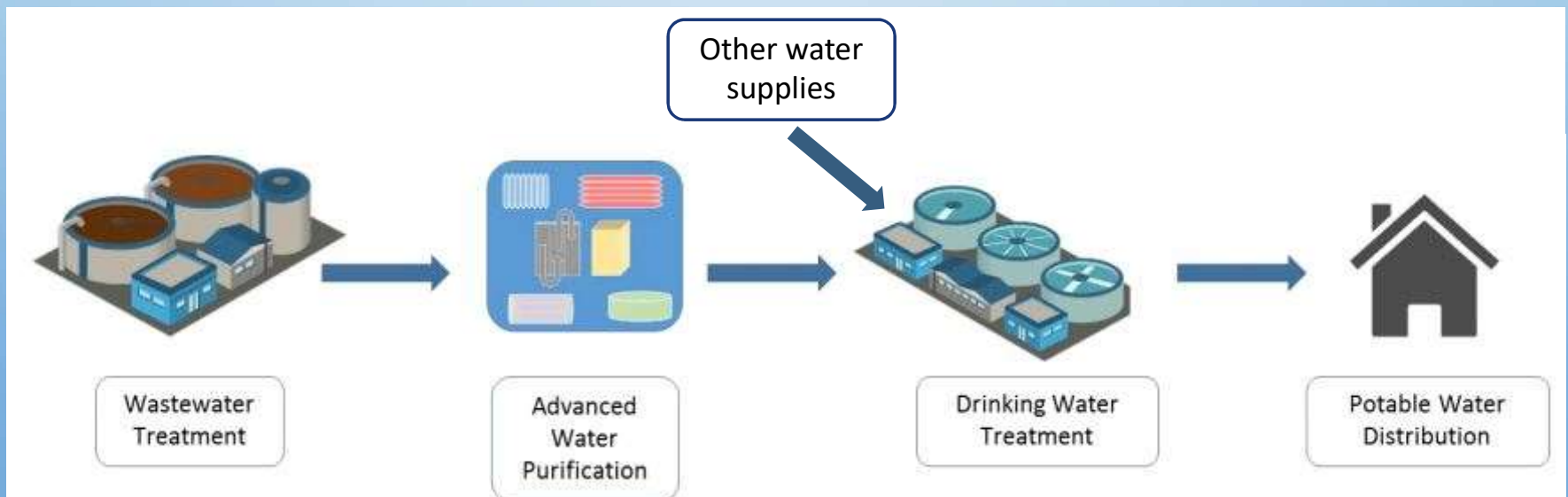
Potable Reuse in Colorado

Today

- Unacknowledged or Indirect Potable Reuse (IPR)

Future

- Direct Potable Reuse (DPR) No “environmental barrier”



Direct Potable Reuse (DPR)



Purified Water

- Safe, high-quality, drinking water supply

- • Use for anything, anytime, anywhere
- Avoid transit losses
- Decreased pumping & transmission costs
- Does not require purple pipe infrastructure
- Increasingly stringent discharge standards → high quality treated effluent

WaterReuse Colorado's Multi-Phase DPR Project



Collaborative: National and Local Expertise

Colorado Water Conservation Board

CDPHE Water Quality Control Division

Basin Roundtables: Metro, **South Platte**, Colorado, North Platte

WaterReuse Colorado

WaterReuse Association

Water Research Foundation

National Water Research Institute

Western Resource Advocates

Denver Water

City of Aurora

Town of Castle Rock

South Metro Water Supply Authority

Centennial Water & Sanitation District

Plum Creek Water Reclamation Authority

Colorado Springs Utilities

Meridian Metropolitan District

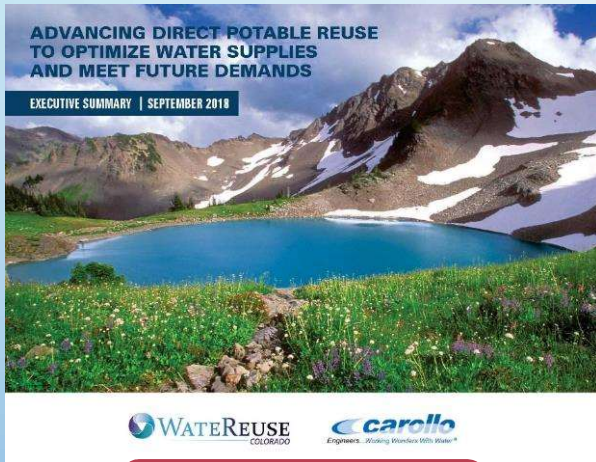
Carollo Engineers

MSK Consulting

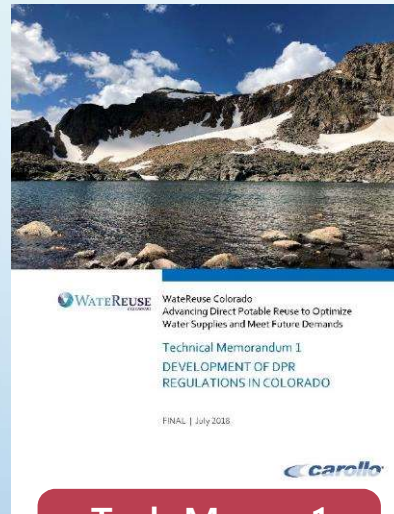
Stantec

Jacobs

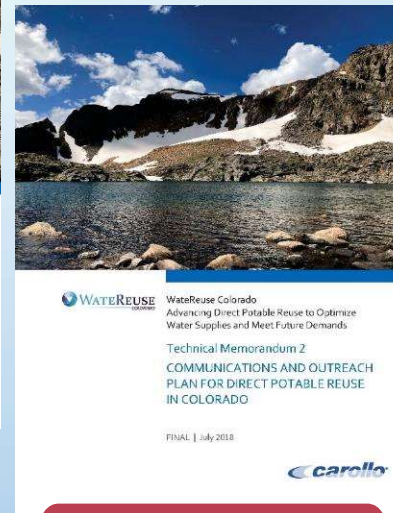
WaterReuse Colorado DPR Project: Phase I Results (2018)



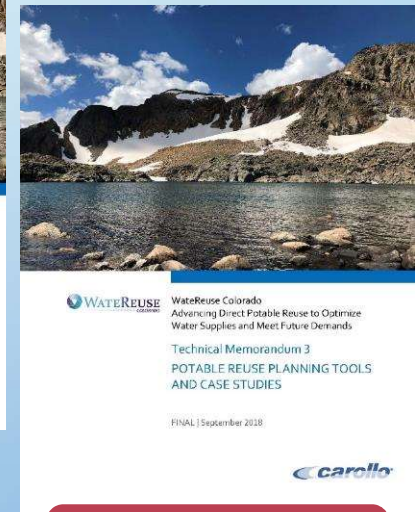
Executive
Summary



Tech Memo 1
Reg Framework



Tech Memo 2
Outreach



Tech Memo 3
Planning Tools

Available at

<https://watereuse.org/sections/watereuse-colorado/>

Phase I: Identified 11 Critical Categories for DPR Regulation

Phase I: Framework and High Level Recommendations

1. Definitions/Terminology
2. Source Control
3. Wastewater Treatment
4. Pathogen Disinfection/Removal
5. Chemical Pollutants
6. Advanced Treatment Processes
7. Monitoring Requirements
8. Reporting
9. Facility operations/ certification programs
10. Education and outreach
11. Technical, Managerial & Financial (TMF) capacity

PHASE II: Details

NWRI | National
Water
Research
Institute

Expert Advisory Panel

 **WATER REUSE**
COLORADO
Workgroup

WaterReuse Colorado's DPR Project Phase II

- National and Local Expertise

- NWRI Independent Advisory Panel of Colorado and national experts
- Colorado stakeholders
- WQCD & CWCB



Guidelines for Direct Potable Reuse in Colorado

NWRI Independent Expert Advisory Panel Final Report

Prepared for:
WaterReuse Colorado
Denver, Colorado

Prepared by:
National Water Research Institute
Fountain Valley, California

Submitted:
December 17, 2019

December
2019

*Final Report
sent to CDPHE*

NWRI *Guidelines for Direct Potable Reuse in Colorado*

Contents

Acronyms and Abbreviations

Terminology

Project Background

Chapter 1: Colorado's Water Supply Challenges

Chapter 2: The First Barrier—Source Control

Chapter 3: Optimizing the Water Reclamation Facility

Chapter 4: The Water Purification Treatment Train

Chapter 5: Pathogen Removal Standards

Chapter 6: Chemical Removal Standards

Chapter 7: Engaging the Community.....

Appendix A: Panel Biographies

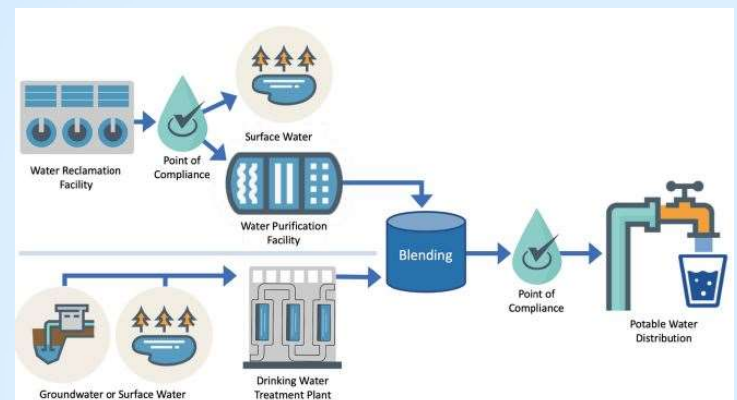
Appendix B: Project Funding and Stakeholder Participation

Appendix C: Hypothetical Indicator Selection Case Study

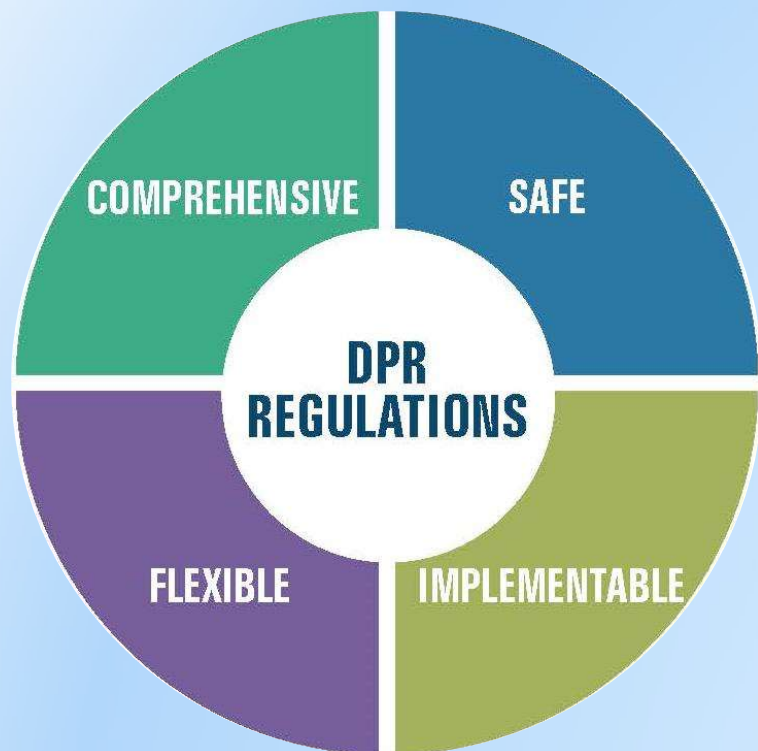
Works Cited

Chapters Include:

- Recommendations:
 - Regulations
 - Policy & Guidance
- Details & Rationale
- References
- Examples

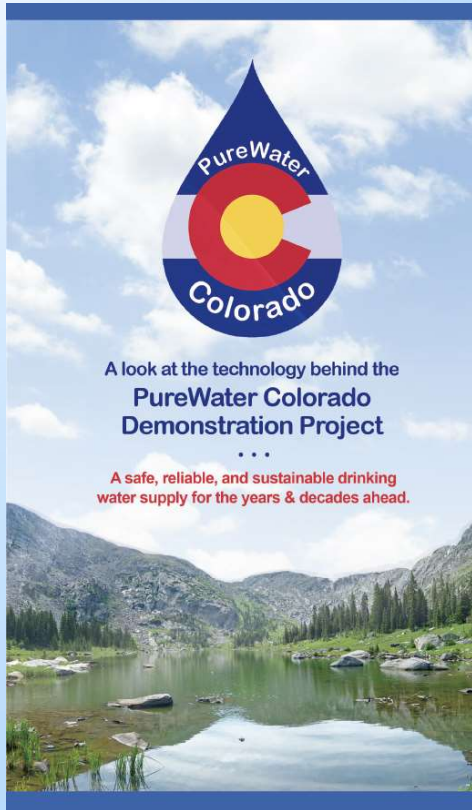


Next Steps for Colorado DPR Regulations



Next Steps

- WQCD stakeholder work beginning ~November 2020
- WQCC rulemaking and policy and guidance finalization (2022?)



PureWater Colorado Momentum Continues!

Continues DPR outreach from Denver Water/WRCO 2018 PureWater Colorado Project

Colorado Springs Utilities, Colorado School of Mines and Carollo Engineers Project. Support from CWCB, WRCO, others

Facility and purified water beverages for outreach/education

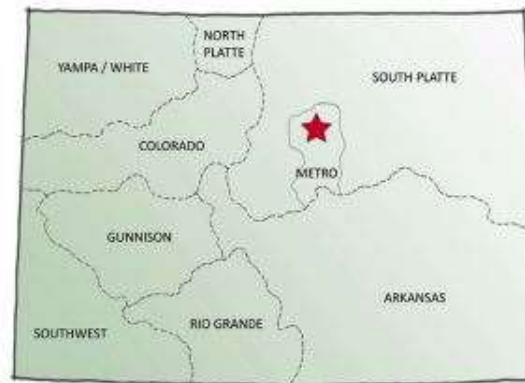
Statewide resource for purified water projects

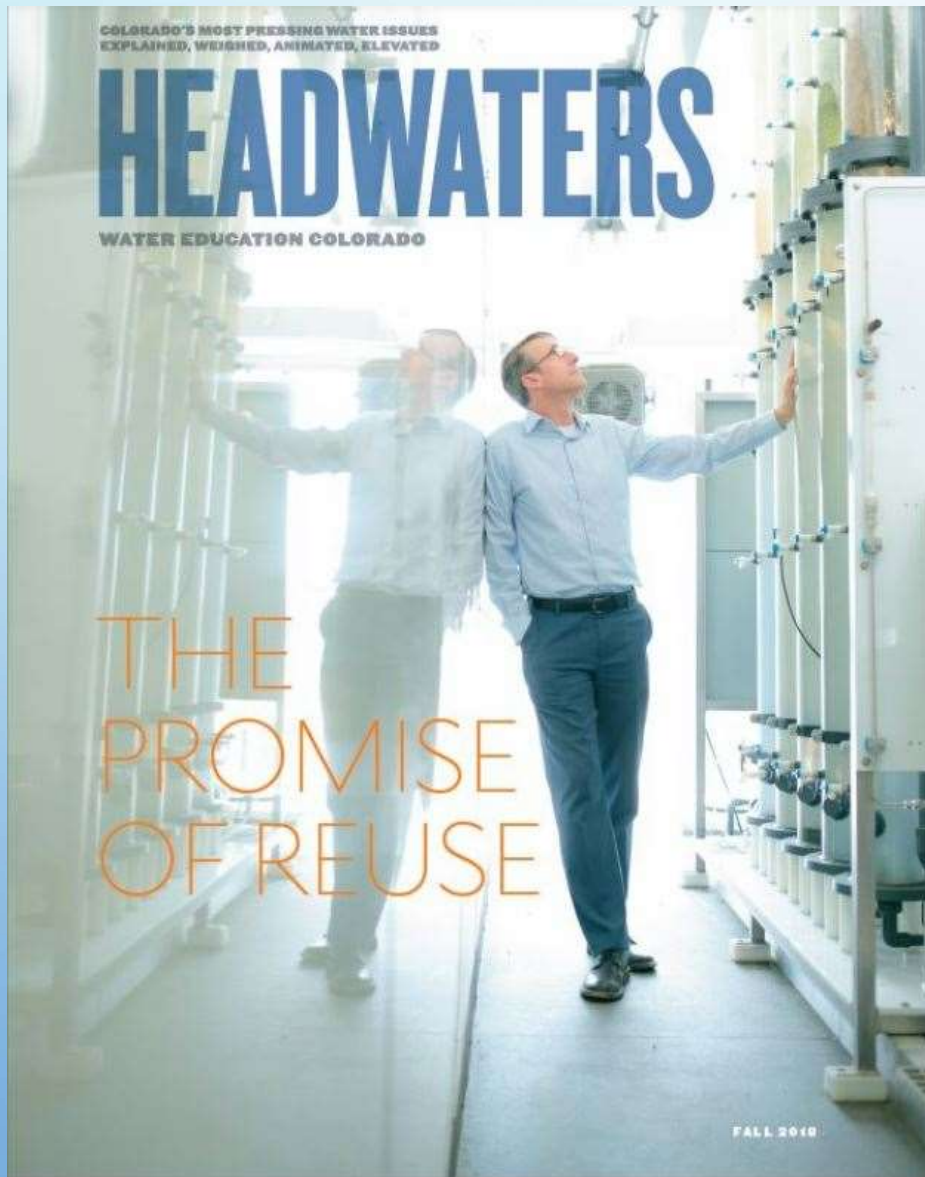


Reuse and the South Platte BIP Update

- Maintain leadership in advancing and implementing reuse
- Consider if recent and upcoming regulatory changes and increased public acceptance could result in:
 - Expanded yields from existing and planned projects
 - Additional reuse projects
- WateReuse is happy to be a resource to the Roundtable

Planning for the South Platte Basin





**WaterReuse Association's
Annual Symposium is in
Denver this year.**

**Save the date:
September 13 – 16, 2020
watereuse.org**

**Thank You
Questions?**



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laura@westernresources.org**